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(71) Applicants *(for all designated States except US)*: **THE CHILDREN'S HOSPITAL OF PHILADELPHIA** [US/US]; 34th Street and Civic Center Boulevard, Philadelphia, PA 19104 (US). **THE TRUSTEES OF THE UNIVERSITY OF PENNSYLVANIA** [US/US]; 3160 Chestnut Street, Suite 200, Philadelphia, PA 19104 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **SHASTRI, Venkatram, P.** [IN/US]; 1134 N. Bethlehem Pike, Lower Gwynedd, PA 19002 (US). **CHEN, I-Wei** [US/US]; 801 Yale Avenue #403, Swarthmore, PA 19081 (US). **ZNIDARSIC, William** [US/US]; 4045 Baltimore Avenue, Apt. C-1, Philadelphia, PA 19104 (US).

(74) Agent: **VOLIN, Marina, E.**; Caesar, Rivise, Bernstein, Cohen & Pokotilow, Ltd., Seven Penn Center, 12th Floor, 1635 Market Street, Philadelphia, PA 19103 (US).

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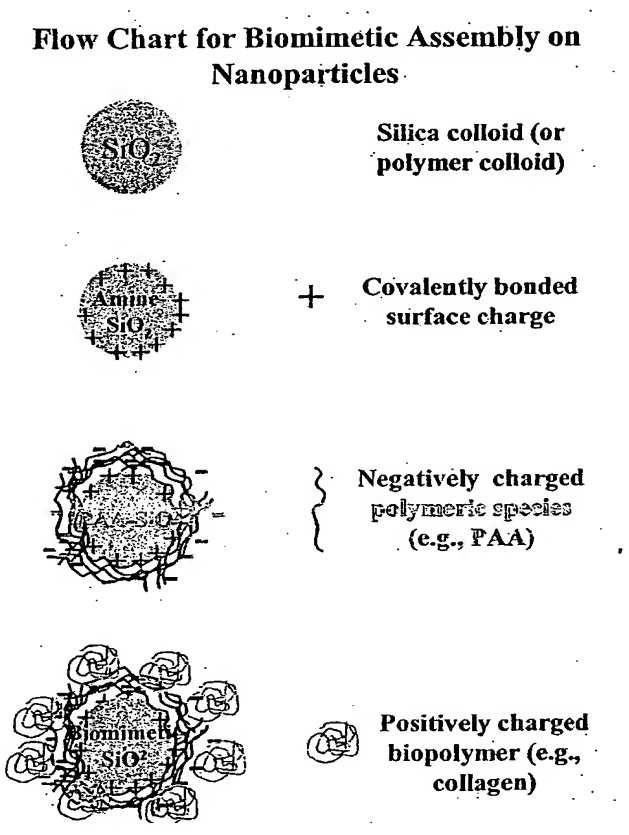
(54) Title: BIOMIMETIC HIERARCHIES USING FUNCTIONALIZED NANOPARTICLES AS BUILDING BLOCKS




(57) Abstract: The invention provides a three-dimensional construct including a polymeric matrix and a nanoparticle as shown in Fig. 1 having a diameter of about 5 nm to about 10 microns, wherein the nanoparticle is (a) coated with at least two monomolecular layers each carrying biological information and (b) dispersed in the polymeric matrix at a density of at least 0.01 vol%. The invention further provides a method of presenting biological information to a cell or a tissue and thereby affecting at least one parameter of the cell or the tissue, the method involves providing the three-dimensional construct and contacting it with the cell or the tissue to present the biological information and thereby affecting at least one characteristic of the cell or the tissue. In certain embodiments, the diameter, the biological information and the density are selected to affect at least one characteristic of the cell or the tissue.

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